## In the Claims:

## WHAT IS CLAIMED IS:

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17. (original) In a touch-screen display system for generating pixel coordinate estimates responsive to a user touching a display screen, an apparatus for generating and validating said pixel coordinate estimates comprising:

a processor to determine a first valid pixel coordinate estimate for a first touch-screen axis of said touch-screen display system before determining a second valid pixel coordinate estimate for a second touch-screen axis of said touch-screen display system.

- 18. (original) The apparatus of claim 17 wherein said processor is adapted to power on said first touch-screen axis of said touch-screen display system and to power off said second touch-screen axis of said touch-screen display system.
- 19. (original) The apparatus of claim 18 wherein said first touch-screen axis is an x-axis and said second touch-screen axis is a y-axis.
- 20. (original) The apparatus of claim 18 wherein said processor is adapted to generate a first pixel coordinate estimate corresponding to said first touch-screen axis and a second pixel coordinate estimate corresponding to said first touch-screen axis such that said first pixel coordinate estimate and said second pixel coordinate estimate are separated in time by a pre-determined sampling interval.
- 21. (original) The apparatus of claim 20 wherein said processor is responsive to said first pixel coordinate estimate of said first touch-screen axis and said second pixel coordinate estimate of said first touch-screen axis to generate a first comparison parameter value.
- 22. (original) The apparatus of claim 21 wherein said processor is adapted to read a pre-determined first threshold value.

- 23. (original) The apparatus of claim 22 wherein said processor is adapted to compare said first comparison parameter value to said pre-determined first threshold value.
- 24. (original) The apparatus of claim 23 wherein said processor is adapted to select said second pixel coordinate estimate of said first touch-screen axis as a first valid pixel coordinate estimate of said first touch-screen axis if said first comparison parameter value is in a first definite relationship to said pre-determined first threshold value.
- 25. (original) The apparatus of claim 23 wherein said processor is adapted to define said first valid pixel coordinate estimate as invalid if said first comparison parameter value is in a second definite relationship to said pre-determined first threshold value.
- 26. (original) The apparatus of claim 25 wherein said processor is adapted to make, at most, a pre-determined number of attempts to generate and select said first valid pixel coordinate estimate.
- 27. (original) The apparatus of claim 25 wherein said processor is adapted to define a "no touch" state as being detected and to generate a "no touch" parameter value to indicate said "no touch" state as being detected when said first valid pixel coordinate estimate is defined as invalid.
- 28. (original) The apparatus of claim 26 wherein said processor is adapted to define said "no touch" state as being detected by generating a "no touch" parameter value to indicate said "no touch" state as being detected if said pre-determined number of attempts is reached and said processor still defines said first valid pixel coordinate estimate as invalid.

- 29. (original) The apparatus of claim 17 wherein said processor is adapted to power on said second touch-screen axis of said touch-screen display system and to power off said first touch-screen axis of said touch-screen display system.
- 30. (original) The apparatus of claim 29 wherein said processor is adapted to generate a first pixel coordinate estimate corresponding to said second touch-screen axis and a second pixel coordinate estimate corresponding to said second touch-screen axis such that said first pixel coordinate estimate and said second pixel coordinate estimate are separated in time by a pre-determined sampling interval.
- 31. (original) The apparatus of claim 30 wherein said processor is responsive to said first pixel coordinate estimate of said second touch-screen axis and said second pixel coordinate estimate of said second touch-screen axis to generate a second comparison parameter value.
- 32. (original) The apparatus of claim 31 wherein said processor is adapted to read a pre-determined second threshold value.
- 33. (original) The apparatus of claim 32 wherein said processor is adapted to compare said second comparison parameter value to said pre-determined second threshold value.
- 34. (original) The apparatus of claim 33 wherein said processor is adapted to select said second pixel coordinate estimate of said second touch-screen axis as a second valid pixel coordinate estimate of said second touch-screen axis if said second comparison parameter value is in a first definite relationship to said predetermined second threshold value.
- 35. (original) The apparatus of claim 33 wherein said processor is adapted to define said second valid pixel coordinate estimate as invalid if said second comparison parameter value is in a second definite relationship to said pre-determined second threshold value.

- 36. (original) The apparatus of claim 35 wherein said processor is adapted to generate and select said first valid pixel coordinate estimate corresponding to said first touch-screen axis before making another attempt to generate and select said second valid pixel coordinate estimate corresponding to said second touch-screen axis.
- 37. (original) The apparatus of claim 36 wherein said processor is adapted to make, at most, a pre-determined number of attempts to generate and select said second valid pixel coordinate estimate.
- 38. (original) The apparatus of claim 35 wherein said processor is adapted to define a "no touch" state as being detected and to generate a "no touch" parameter value to indicate said "no touch" state as being detected when said second valid pixel coordinate estimate is defined as invalid.
- 39. (original) The apparatus of claim 37 wherein said processor is adapted to define said "no touch" state as being detected by generating a "no touch" parameter value to indicate said "no touch" state as being detected if said pre-determined number of attempts is reached and said processor still defines said second valid pixel coordinate estimate as invalid.
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- 70. (original) In a touch-screen display system for generating pixel coordinate estimates responsive to a user touching a display screen, a method for generating and validating said pixel coordinate estimates comprising:

generating and determining the validity of a first valid pixel coordinate estimate for a first touch-screen axis of said touch-screen display system before generating and determining the validity of a second valid pixel coordinate estimate for a second touch-screen axis of said touch-screen display system.

- 71. (original) The method of claim 70 further comprising powering on said first touch-screen axis of said touch-screen display system and powering off said second touch-screen axis of said touch-screen display system.
- 72. (original) The method of claim 71 wherein said first touch-screen axis is an x-axis and said second touch-screen axis is a y-axis.
- 73. (original) The method of claim 71 further comprising generating a first pixel coordinate estimate corresponding to said first touch-screen axis and a second pixel coordinate estimate corresponding to said first touch-screen axis such that said first pixel coordinate estimate and said second pixel coordinate estimate are separated in time by a pre-determined sampling interval.

- 74. (original) The method of claim 73 further comprising generating a first comparison parameter value from said first pixel coordinate estimate of said first touch-screen axis and said second pixel coordinate estimate of said first touch-screen axis.
- 75. (original) The method of claim 74 further comprising comparing said first comparison parameter value to a pre-determined first threshold value.
- 76. (original) The method of claim 75 further comprising selecting said second pixel coordinate estimate of said first touch-screen axis as a first valid pixel coordinate estimate of said first touch-screen axis if said first comparison parameter value is in a first definite relationship to said pre-determined first threshold value.
- 77. (original) The method of claim 75 further comprising defining said first valid pixel coordinate estimate as invalid if said first comparison parameter value is in a second definite relationship to said pre-determined first threshold value.
- 78. (original) The method of claim 77 further comprising making, at most, a pre-determined number of attempts to generate and select said first valid pixel coordinate estimate.
- 79. (original) The method of claim 77 further comprising defining a "no touch" state as being detected and generating a "no touch" parameter value to indicate said "no touch" state as being detected when said first valid pixel coordinate estimate is defined as invalid.
- 80. (original) The method of claim 78 further comprising a "no touch" state as being detected by generating a "no touch" parameter value to indicate said "no touch" state as being detected if said pre-determined number of attempts is reached and said first valid pixel coordinate estimate is still defined as invalid.

- 81. (original) The apparatus of claim 70 further powering on said second touch-screen axis of said touch-screen display system and powering off said first touch-screen axis of said touch-screen display system.
- 82. (original) The method of claim 81 further generating a first pixel coordinate estimate corresponding to said second touch-screen axis and a second pixel coordinate estimate corresponding to said second touch-screen axis such that said first pixel coordinate estimate and said second pixel coordinate estimate are separated in time by a pre-determined sampling interval.
- 83. (original) The method of claim 82 further comprising generating a second comparison parameter value from said first pixel coordinate estimate of said second touch-screen axis and said second pixel coordinate estimate of said second touch-screen axis.
- 84. (original) The method of claim 83 further comprising comparing said second comparison parameter value to a pre-determined second threshold value.
- 85. (original) The method of claim 84 further comprising selecting said second pixel coordinate estimate of said second touch-screen axis as a second valid pixel coordinate estimate of said second touch-screen axis if said second comparison parameter value is in a first definite relationship to said pre-determined second threshold value.
- 86. (original) The method of claim 84 further comprising defining said second valid pixel coordinate estimate as invalid if said second comparison parameter value is in a second definite relationship to said pre-determined second threshold value.
- 87. (original) The method of claim 86 further comprising generating and selecting said first valid pixel coordinate estimate corresponding to said first touch-screen axis before again attempting to generate and select said second valid pixel coordinate estimate corresponding to said second touch-screen axis.

- 88. (original) The method of claim 87 further comprising making, at most, a pre-determined number of attempts to generate and select said second valid pixel coordinate estimate.
- 89. (original) The method of claim 86 further comprising defining a "no touch" state as being detected and generating a "no touch" parameter value to indicate said "no touch" state as being detected when said second valid pixel coordinate estimate is defined as invalid.
- 90. (original) The method of claim 88 further comprising said "no touch" state as being detected by generating a "no touch" parameter value to indicate said "no touch" state as being detected if said pre-determined number of attempts is reached and said second valid pixel coordinate estimate is still defined as invalid.
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102. (original) A method of determining a touch screen coordinate for a touch screen comprising the steps of:

turning on the driver of the coordinate to be measured;

measuring minimum, maximum, and raw position data for the coordinate being measured; and

determining the coordinate position as a function of the raw position in relation to a coordinate range.

- 103. (original) The method of claim 102 wherein the range is determined as a function of the difference between the minimum and maximum position data.
- 104. (original) The method of claim 103 wherein the positioning determining step includes subtracting the minimum position data from the raw position data.
- 105. (original) The method of claim 104 wherein the raw, minimum and maximum position data are used to calibrate the touch screen without requiring specific calibration using input.
- 106. (original) The method of claim 104 including the further step of turning off the driver of a coordinate not being measured.
- 107. (original) The method of claim 104 wherein the foregoing steps are repeated for the other driver whose coordinate is to be determined.
- 108. (original) An apparatus determining a touch screen coordinate for a touch screen comprising:

means for turning on the driver of the coordinate to be measured;

means for measuring minimum, maximum, and raw position data for the coordinate being measured; and

means for determining the coordinate position as a function of the raw position in relation to a coordinate range.

- 109. (original) The apparatus of claim 108 wherein the coordinate range is determined as a function of the difference between the minimum and maximum position data.
- 110. (original) The apparatus of claim 109 wherein the positioning determining means includes means for subtracting the minimum position data from the raw position data.
- 111. (original) The apparatus of claim 110 wherein the raw, minimum and maximum position data are used to calibrate the touch screen without requiring specific calibration using input.
- 112. (original) The apparatus of claim 110 further including means for turning off the driver of a coordinate not being measured.
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